IN THE CLAIMS:

Claim 1 (original): A radiation imaging apparatus comprising:

a radiation detecting unit having radiation detectors, arranged in a two-dimensional array, for detecting radiation transmitted through an object as electrical signals; and

an image-display controlling unit for radiographing radiation images of the object, detected as the electrical signals by said radiation detecting unit, at a predetermined frame rate as continuous images in a plurality of frames and for displaying a processed image given by subtracting an m-th image from an (m+l)-th image in synchronous with either the m-th image or the (m+l)-th image that does not undergo the subtraction in a display, where m is a natural number.

Claim 2 (original): A radiation imaging apparatus according to Claim 1, wherein said image-display controlling unit performs the subtraction after grayscale conversion or edge enhancement is performed for the m-th image or the (m+l)-th image as required.

Claim 3 (original): A radiation imaging apparatus according to Claim 1 or 2, wherein the radiation detectors each include a wavelength converter for converting the radiation into visible light and a photoelectric transducer for transducing the visible light converted by the wavelength converter into the electrical signals.

Claim 4 (original): A radiation imaging apparatus according to Claim 3, wherein the wavelength converter is made of material including gadolinium oxysulfide, gadolinium oxide, or cesium iodide as a principal component.

Claim 5 (currently amended): A radiation imaging apparatus according to Claim 3 [[or 4]], wherein the photoelectric transducer is a metal-insulator-semiconductor (MIS) sensor or a pin sensor using an amorphous silicon semiconductor.

Claim 6 (original): A radiation imaging apparatus according to Claim 5, wherein the MIS sensor includes:

a first thin metal film formed as a lower electrode;

an insulating film made of amorphous silicon nitride, formed on the first thin metal film, for blocking passage of electrons and holes;

a photoelectric-conversion layer made of amorphous silicon hydride, formed on the insulating film;

an N-type injection-blocking layer, formed on the photoelectric-conversion layer, for blocking the injection of the holes; and.

a transparent conductive layer formed on the N-type injection-blocking layer as an upper electrode or a second thin metal film formed on part of the injection-blocking layer,

wherein, in a refreshing mode, an electrical field is exerted on the MIS sensor so as to lead the holes from the photoelectric-conversion layer to the second thin metal film,

wherein, in a photoelectric conversion mode, the electrical field is exerted on the MIS sensor such that the holes generated by the radiation incident on the photoelectric-conversion layer stay in the photoelectric-conversion layer and so as to lead the electrons to the second thin metal film, and

wherein the holes accumulated in the photoelectric-conversion layer in the photoelectric conversion mode or the electrons led to the second thin metal film are detected as optical signals.

Claim 7 (original): A radiation imaging apparatus according to Claim 1 or 2, wherein each of the radiation detectors, made of lead iodide, mercury iodide, selenium, cadmium telluride, gallium arsenide, gallium phosphide, zinc sulfide, or silicon, absorbs the radiation and directly converts the absorbed radiation into the electrical signals.

Claim 8 (original): A radiation imaging system having a radiation imaging apparatus comprising:

a radiation source emitting radiation;

a radiation detecting unit having radiation detectors, arranged in a two-dimensional array, for detecting radiation emitted from the radiation source and transmitted through an object as electrical signals: and

an image-display controlling unit for radiographing radiation images of the object, detected as the electrical signals by the radiation detecting unit, at a predetermined frame rate as continuous images in a plurality of frames and for displaying a processed image given by subtracting an m-th image from an (m+l)-th image in

synchronous with either the m-th image or the (m+1)-th image that does not undergo the subtraction in a display, where m is a natural number,

wherein the radiation source emits the pulsed radiation and sets a tube voltage when the m-th image is radiographed differently from a tube voltage when (m+1)-th image is radiographed, and

wherein the processed image is given by subtracting the m-th image from the (m+1)-th image in the image-display controlling unit.

Claim 9 (original): A radiation imaging method comprising:

a radiation detecting step, of detecting radiation transmitted through an object as electrical signals by using radiation detectors arranged in a two-dimensional array; and

an image-display controlling step, of radiographing radiation images of the object, detected as the electrical signals in said radiation detecting step, at a predetermined frame rate as continuous images in a plurality of frames and for displaying a processed image given by subtracting an m-th image from an (m+l)-th image in synchronous with either the m-th image or the (m+1)-th image that does not undergo the subtraction in a display, where m is a natural number.

Claim 10 (new): A radiation imaging apparatus according to Claim 4, wherein the photoelectric transducer is a metal-insulator-semiconductor (MIS) sensor or a pin sensor using an amorphous silicon semiconductor.

Claim 11 (new): A radiation imaging apparatus according to Claim 10, wherein the MIS sensor includes:

a first thin metal film formed as a lower electrode;

an insulating film made of amorphous silicon nitride, formed on the first thin metal film, for blocking passage of electrons and holes;

a photoelectric-conversion layer made of amorphous silicon hydride, formed on the insulating film;

an N-type injection-blocking layer, formed on the photoelectric-conversion layer, for blocking the injection of the holes; and.

a transparent conductive layer formed on the N-type injection-blocking layer as an upper electrode or a second thin metal film formed on part of the injection-blocking layer,

wherein, in a refreshing mode, an electrical field is exerted on the MIS sensor so as to lead the holes from the photoelectric-conversion layer to the second thin metal film,

wherein, in a photoelectric conversion mode, the electrical field is exerted on the MIS sensor such that the holes generated by the radiation incident on the photoelectric-conversion layer stay in the photoelectric-conversion layer and so as to lead the electrons to the second thin metal film, and

wherein the holes accumulated in the photoelectric-conversion layer in the photoelectric conversion mode or the electrons led to the second thin metal film are detected as optical signals.